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Innovation Dynamics and Evolutionary Economics Paths in the Music Industry

Caterina Cardinali – Massimiliano Mazzanti

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Innovation Dynamics and Evolutionary Economic Paths in the Music Industry

Caterina Cardinali & Massimiliano Mazzanti[1]

Abstract

This work aims at analysing the evolution of music industry, since the beginning of music marketed as a product for the masses until the new frontiers of digital music. Our goal is to identify which factors played a key role in the evolution of the demand in the last years and in the largely discussed crisis of the international music market. In order to reach our goal, it is necessary to contextualise the analysis, starting from the definition of the so-called pop music, or popular music, that must not be confused with the expression "musica popolare" that in Italian defines folk traditional music. We analysed diverse sets of data, ranging from economic ones to sociology-related studies, which helped us to understand, through the contribution of several schools of thought, which factors influence music consumption and to what extent demand and supply influence each other. Our work focuses on the conception of the music market as an eclectic sector of cultural industry, halfway between entertainment, leisure and culture. Music can be used in several ways, and during the years the use has been modified by the implementation of new technological means (particularly referring to the phonograph) by the attempt to satisfy needs that change constantly, such as self-accomplishment, social aggregation or escape from the routine. On the basis of these needs the industry periodically tried to control demand through push strategies, trying to impose new musical trends and pull strategies, adapting to the consumption trends registered. It is important to determine to what extent acting on the market influenced the current situation and whether in this context music is the only element to take into account or not. Our idea is that music does not always play a key role in demand dynamics, that is to say music influences consumption to the extent it is able to meet specific requests by the public, that sometimes are not strictly related to the product itself. Because of the uncertainty of the record industry, technology, market situation and demand become extremely interdependent factors.

JEL Classification: O3, Z1

Keywords: Schumpeterian dynamics, Music industry, Appropriability, Radical innovations

[1] University of Bologna, University of Ferrara, mzzmsm@unife.it

Introduction

This work aims at analysing the evolution of music industry, since the beginning of music marketed as a product for the masses until the new frontiers of digital music. Our goal is to identify which factors played a key role in the evolution of the demand in the last years and in the largely discussed crisis of the international music market. In order to reach our goal, it is necessary to contextualise the analysis, starting from the definition of the so-called pop music, or popular music, that must not be confused with the expression "musica popolare" that in Italian defines folk traditional music. We analysed diverse sets of data, ranging from economic ones to sociology-related studies, which helped us to understand, through the contribution of several schools of thought, which factors influence music consumption and to what extent demand and supply influence each other. Our work focuses on the conception of the music market as an eclectic sector of cultural industry, halfway between entertainment, leisure and culture. Music can be used in several ways, and during the years the use has been modified by the implementation of new technological means (particularly referring to the phonograph) by the attempt to satisfy needs that change constantly, such as self-accomplishment, social aggregation or escape from the routine. On the basis of these needs the industry periodically tried to control demand through push strategies, trying to impose new musical trends and pull strategies, adapting to the consumption trends registered. It is important to determine to what extent acting on the market influenced the current situation and whether in this context music is the only element to take into account or not. Our idea is that music does not always play a key role in demand dynamics, that is to say music influences consumption to the extent it is able to meet specific requests by the public, that sometimes are not strictly related to the product itself. Because of the uncertainty of the record industry, technology, market situation and demand become extremely interdependent factors.

1. Two interpretations: cyclic and open patterns

The theories about a possible interactivity between market typology and artistic-technologic innovation refer to an idea according to which a certain market structure can influence innovation positively or negatively and the development of new products. From the moment of its creation, discography has always been characterized by an oligopolistic structure. The situation has been stable except during short periods when the creation of new profit opportunities favoured the proliferation of firms and a higher competition to reach the targets. This remark was made for the first time in 1975 by Peterson and Berger, who developed the idea from two study fields emerged in the first half of the Twentieth century: the critique of mass-culture and the industrial organization in the music field. The critique of mass culture originates as a phenomenon of protest against the 'commodification' of culture, considered as a threat to artistic and cultural production itself for three main reasons. Firstly, because business instead of the artist became the centre of the artistic

production; secondly, profit became the main goal and thirdly it would have caused the so-called mass culture - as defined by the modern industrial system – to overrule both popular culture and elite culture, drifting it away from the roots that originated it. The studies on industrial organization in the music field focused on record labels' industry modus operandi, highlighting the influence of market factors on the quality of the product. In particular, a few scholars studied the relation between the expansion of the company and the opportunities for innovation. Since it is a kind of company involved in the trade of cultural products, the term innovation also includes the spreading of new genres, known as musical diversification. In this respect, many authors stated that "the real nature of a big company, which implies vast bureaucracy, collective decisions, company conservatorism, leads to inertia rather than innovation" (Dowd, 2009). Considering this idea as far as small firms are concerned, the uncertainty of the market position can easily lead to the experimentation of new production methods and to a desirable innovation. This last hypothesis represents in short the content of the cyclic interpretation, according to which diversification diminished as the rate of market concentration raised. This observation was made on the basis of the creation of a general pattern that identifies 4 diversification factors :

- successful recordings
- new executors
- presence of independent labels on the market
- topics dealt with in the songs' lyrics

If we considered this theory exact a priori, it would mean that we take for granted that such isolated parameters correspond to real musical diversification, which is not easy to identify. Probably this does not represent the ultimate way to detect variety in the music sector, but it surely can frame the analysis from an historical point of view, providing us with the foundations for a more generic reflection on the relationship between production and artistic plurality.

At the beginning of the 20th century the cradle of musical creativity was one "laboratory", called Tin Pan Alley, where musicians used to produce a “cacophonous” mix of sounds. From this producers were able to select the product to put into the market. The situation was quite simple. Nonetheless in the following years big producers probably underestimated the impact of the need for music that had become so important for new generations. This paved the way for the brand new independent labels, which accepted straight away the demand for a type of music with more rhythm, impulsing the production of rhythm and blues and rock and roll. Because of unrepeatable historic factors, such as the proliferation of radio stations that acted as a sound box for the new vibes, the structure of the industry changed favouring the decentralization, for a short period, around 1955. During this period, new labels were able to gain a significant part of the market,

threatening in this way the monopoly of the major labels such as Atlantic, Chess and King. But some independent labels – that appeared between the 40s and the 50s - succeeded in exploiting to the fullest the new demand for music reaching in this way the status of major. This happened for instance to Capitol, Mercury and Mgm which joined Columbia, Rca Victor and Decca that at that time held 100% of the market. This figure is useful to the support of a relative positive effect of productive decentralization, besides the importance of minor businesses for innovation. Anyway there is no doubt that a recording label gets a certain importance only when it becomes able to influence the market, a thing that an independent label cannot do with its own forces. Our attention is therefore driven towards this first theory, according to which the real driving forces of the industry are independent labels. Let consider what happened around 1950. New industries were developing and since they started competition in getting hold of new talents, majors exploited their huge buying power to obtain that artistic capital that was impoverishing them. This was the case of Rca in 1955 when they purchased Elvis' talent for a 40,000 dollars value. Elvis and rock and roll had such great success thanks to this new contract and to the fame acquired through phenomena like media diva-like attitude, it would have been impossible otherwise to become so successful. This is the reason why we can state that in this case real innovation is unfortunately brought about by majors. A similar situation was that of Buddy Holly and Bill Haley, signed then by Decca. Both of them played an important role in the popular music innovation: the former "invented" modern band formation, composed of bass, double guitar and drums, the latter signed the first official rock and roll hit song, Rock Around the Clock, that in 1955 ranked first in the charts for 8 weeks.

At this point the cyclic interpretation does not dispel all doubts: since the second half of the 20th century big entrepreneurs decided to exploit the favourable factors -typical of minor businesses -starting a decentralization phenomenon. This means that majors acquired auxiliary labels aimed at recruiting new talents. This strategy was fruitful. Besides favouring diversification, it eased bureaucratic procedures and promoted mobility among the staff, which could be moved to the record companies' annexes. This is the description, in short, of the open interpretation, which explains diversification awarding it to the crossbreeding factor between major labels and independent labels, since the former can emulate the latter's experimentation, exploiting then their marketing power to impose new mass musical products.

In Dowd's opinion the cyclic thesis presents a few flaws. He questions the creators stating that the principles cannot be applied in the following years, after the evolution of the market. The era described by Peterson and Berger is characterised by a high concentration due to the necessity of major labels to contrast the rising of new companies. The consequence is a lack of diversification. Because of this concentration the responsibilities became congested and bureaucratic practices became stiffer. This demonstrates that, for better and for worse, market is in some respect controlled by the biggest businesses. The studies carried out by researchers (Hollingsworth 1990; Kanter 1991; Powell 1990, etc) are the basis of this lack of

correspondence between reality and theory. They elaborated a different theory, according to which concentration can have a positive effect on musical diversification if it is led through a decentralized production.

Since 1955 onwards, the year that Timothy J Dowd considers a turning point for the market, major labels adopted decentralized production en masse, that is to say they unanimously decided to decentralize their business acquiring "branch" labels. Decca was one among the first ones to adopt this production approach. Decca already in 1949 had founded the label Coral to produce rhythm & blues. This new label boosted the total profit, therefore the head office decided to create another label in 1953, Brunswick, to meet adolescents' tastes. "At the beginning of 1955, all major labels had at least one specialized auxiliary that extended their traditional pop music offer" (Dowd, 2000). The agreement between major and auxiliaries worked more or less as follows: the majors offered to distribute independents' albums and in exchange they got production rights, profits and sometimes they could also influence stylistic choices.

Lastly they formed proper joint ventures with independent labels, business agreements that would guarantee a higher percentage of profits and more control on production choices. Starting from the implementation of this production logic, there would not be anymore a correspondence between the name of the label and the record producer.

This characteristic is still present. First of all Dowd decided to assess the effective validity of the parameters elaborated beforehand by Peterson and Berger, questioning a series of so-called non-musical variables:

- identifying the effective musical diversification with the production of successful tracks could be wrong. There is no direct correspondence between musical variety and successful tracks, which could anyways exploit a limited range of musical elements

- signing new artists does not guarantee a repertoire variation in terms of harmony and melody;
- the presence of independent labels on the market may not constitute a determining diversification index

He got the following conclusions. As far as independent labels are concerned, we can note that during the 50s they were able to contrast the majors' success, promoting new hits. Nonetheless the musical repertoire was not particularly innovative, it simply represented a different declension in comparison to mainstream panorama.

New artists generally do not have control either on published material (both in terms of rights and profits) or on stylistic choices. The artists who are signed for the first time must respect their first record's producer's needs. The producer is likely to address the new entry to genres already known as profitable, discouraging in this way experimentations and diversification. Because of this, innovation is more likely to come from

already accomplished artists, who were able to form a well-established public, who have the necessary fame to acquire property rights on their own production and enough autonomy about stylistic choices.

Considering the production of successful tracks as a diversification index, the researcher decided to analyse the content of the songs ranking first in the weekly American chart, between 1955 and 1990. He chose therefore a random sample made of 110 hit songs (corresponding to the 15% of the total songs in the chart) that examined through 29 factors concerning musical characteristics (melodic structure, rhythm, structure of the song, etc.) to elaborate valuable parameters that could be measured numerically to evaluate musical diversification. This evaluation is the dependent variable with respect to the general analysis. But thanks to this first observation Dowd remarked how the range of musical elements grew regularly from 1955 onwards.

As for the independent variable, made of non-musical factors, he decides to analyse the following parameters: market concentration, number of weeks as number one in the charts, independent labels, successful artists and new ones (obtaining the dichotomy or dummy variable defined as "executor's autonomy") and the portion of the song destined to instruments, identifying this last one as the decisive factor that distinguishes an innovative track from a more traditional one.

The result of the confrontation among dependent variables (related to the song's characteristics) and independent variables (non-musical) confirm complex theses that were elaborated beforehand while others have been proven wrong.

We could remark that autonomous executors, and by autonomous we mean well-established, created musically innovative tracks. On the other hand the production of new artists or of independent labels do not seem to have produced any innovation. This remarks would support the idea according to which concentration is a positive factor for musical diversification.

As far as the number of weeks at the top of the charts is concerned, Dowd noted how the songs that ranked at the top for a higher number of weeks are musically less varied in comparison to those that ranked first for one week only. This variable confirms the thesis elaborated by Peterson and Berger and introduced as an evaluation factor for diversification, according to which a higher variety corresponds to a higher number of hits a year.

This supports the idea that to a higher offer would correspond a wider range of musical elements.

This means that a song that is in the charts for a shorter period of time is musically more varied than a song that is a hit for more weeks. We understand that less popular songs are actually the more innovative ones. This is the only factor that confirms the thesis by the authors above mentioned, while any other factor would seem to strengthen the open theory.

Music offered by independent labels is surely useful to differentiation, but only to the extent in which it presents artistic resources profitable for major labels. They should be able to use these raw elements and stylistic prototypes to elaborate new musical genres that are original and recognizable.

2. From the record labels' point of view

A record label is a trademark created by companies specialized in music. Since the creation and following market evolution, labels became characterised firstly by the percentage of market they held. Today labels can be divided in two main categories, defined on the basis of the type of power they have in the production and distribution of music. We are talking about major and independent labels. A major label is a record company that, considering its market power and the capital, is able to produce and distribute records with its own means, keeping a balance also with artists and publishers.

The majors' role is often considered contradictory, because on the one hand thanks to their means they represent the only type of company that can promote really innovative phenomena on an international scale. On the other hand, because of the high costs to deal with and of the risks connected to the promotion of a new artist, majors' behaviour involves strategies of gradual innovation.

Through gradual innovation companies can have more control and can invest in market surveys and other marketing strategies, in this way knowing in advance market trends and ensuring maximum profits.

This fact may partially justify the current situation that presents very few powerful companies that hold market shares ranging from 11% to 25%[2] and that seem to invest too little on new entries.

Anyways, as we are going to explain later, the situation is a lot more complex. Independent labels were created as a consequence of the autonomy of production achieved because of the low cost of new music's recording.

This phenomenon can stoke up the innovation process, as it is demonstrated by the proliferation of new musicians during the 50s, but it does not allow the artists to reach enough fame to earn one's living as professional musicians and to sell their music internationally.

These preliminary remarks are useful to introduce the features that characterise the situation before the current one. So, technological progress is not naturally followed by a product innovation but, on the contrary, a moment of crisis partly due to the industry's inability to exploit to its advantage such change, and partly due to the incredible power that common people have in deciding which products are successful, as it happens for almost all artistic and cultural production.

The innovative change this time does not come from technologic industry but from an individual, Sean Fenning who in 1999 launched his virtual creation, Napster, that is a system which provided its users with

[2] Ifpi Report 2005

the opportunity to share music files and exchange them allowing everyone to possess a personal copy of each file. Napster was closed in a short time and labelled as illegal, but other peer to peer systems appeared. The newest versions did not leave traces of illegality[3], they spread and turned file sharing into the first option for music purchase.

According to some people this phenomenon freed music from the useless bonds with the industry, which limited usability and therefore diversification. It basically turned music into a service, rather than a privilege. According to other people, including some musicians, the introduction of a system that deletes all access barriers to the listening of music has from the one hand threatened artists' property rights on their tracks and on the other hand cancelled the selection on the kind of music that can or must be marketed. This task was once exclusively up to scouts, managers, producers and other professionals working in the music industry, while looking at the current situation we can see a total openness towards listening and music production that actually reduces the opportunities for musicians to become professionals.

In the end this condition strengthens the barriers between musicians and producers. If it is true that only major labels are able to sign long-term contracts able to guarantee musicians the possibility to subsist on music, fully devoting their time to that profession, it is also true that the opportunity for a perspective purchaser to download for free a track online threatens the whole industry, that risks to invest massive amounts of money on artists that could turn out to be a huge failure.

In this context the industry would want to participate almost totally in the production of music, annihilating the artist's autonomy. This process generates another vicious circle that causes mutual diffidence among artists with a personal repertoire and major labels.

In particular labels do not want to be responsible for putting on the market a new music style whose potential has never been assessed through specific marketing instruments, such as target analysis. Clearly in this situation diversification is the first elements affected. If it is true that in pop music industry style differentiation is a very gradual process that has to do with the artist's autonomy and with artistic-cultural phenomena that affect society bottom-up, as they have tried to prove up to now, it is also true that, since these creative resources have been burnt at the roots, the scenario ahead of us is quite dark.

In the following analysis I attempted to demonstrate this theory, taking into account a sample of *hit songs* [4]published by Billboard, a well-known American magazine that every week publishes several charts based on sales data and radio airplay as compiled by Nielsen[5]. The sample includes 131 songs that ranked among the first ten in pop songs' charts from 1995 to 2010. The sample is random, and the time span makes it

[3] Systems like Emule, Kazaa and others operate through a high number of displaced servers hardly traceable, on the contrary Napster was operating through one only central server that documented illegal music exchanges.
[4] Song belonging to the *pop* cathegory
[5] www.nielsenmusiccontrol.com

possible for us to evaluate how much file sharing influenced, since its diffusion, the production of new successful music.

Since Billboard charts have been published in a complete way only since 1995 onwards, I could not analyse a sample comprehensive of the whole decade, even if in any case the songs are by artists emerged from 1990 to 2010.

In Dowd's analysis, innovation as far as style is concerned was evaluated through elements belonging to music theory and practice: in the case I am about to propose this type of analysis was not possible because of a lack of sound knowledge of music theory. I found therefore an alternative ploy: I decided to measure the diversification factor in terms of "new entry", or the percentage of new artists that in the period belong to the previous decade or the decade following the use of mp3 and file sharing. I supported the theory that if the percentage of new entries is higher, also the probability for a music style to evolve is higher considering that any individuality brings about a unique element in its production, especially if we are talking about a product with a strong artistic characterization.

The data concerning the 131 analysed cases have been put in a chart that considers 3 variables, related to the period taken into account (90s, 00s):

- Which year the artist entered the market, considering the period between 1990 and 2000;
- Record label where the artist came from (independent or major, including in this last category also minor labels belonging to bigger companies)
- Potential contract with a major in the case the artist had produced the first album, single, or EP autonomously or thanks to the support of an independent label.

Tab.1. Analysis of Billboard's charts from 1995 to 2010

Pop songs 1995-2010	1990-2000	2000-2010
% new entry	67	33
% artists working with an independent label	14,7	3,3
% artists working with a major label	85,3	96,7

If we compare the two decades taken into consideration, leaving out for a moment that the relation between the presence of artists produced by an independent is in some way an index of diversification as demonstrated in the open thesis, we can note a decrease by 55% in the new entries percentage between the 90s and the 00s.

We can also suppose a progressive market concentration, since the percentage of artists produced by independent labels decreases in a more than proportional way during the two decades. A figure that I did not include in the chart is the rate of artists, emerged thanks to independent labels, who afterwards signed a contract with a major. The rate is 100%, and that means that, in the sample we used, a contract with a major is an essential factor for an artist to have the opportunity to be in the top ten most popular songs chart.

The difficult part is understand to what extent the success of new pop stars can be favoured by a more open market. As we already mentioned, during the 90s the market was controlled by an oligopoly characterized by a high concentration, nonetheless the specialization task was up to independent labels. They had to promote niche styles that could in some way enrich the music panorama.

In some rare occasions niche artists became so successful to be signed by a major label that could provide the artists with more guarantees on profits and fame.

Since the year 2000 this phenomenon of cooperation between bigger and smaller labels ran out, probably because of two main factors:

- A progressive concentration of the market;
- Major labels' reluctance in producing new artists who create music autonomously

This analysis highlights that even if the industry has huge possibilities, capital and technology, the production of new artists is constantly decreasing, therefore the causes of this phenomenon are to be found elsewhere.

With the introduction of the mp3, there was a revolution since music availability shifted online. This enabled artists to have more opportunities to have contacts with the public but at the same time the industry did not know how to react, it was not able to immediately cope with this technological innovation that started from the bottom and not from big enterprises. Discography had therefore to face a crisis that has been going on until now and has consequently affected artistic innovation of the product in terms of producing new artists. On the other hand the global financial crisis of the end of the year 2001 can be considered another factor influencing the scarce incentive to the purchase of new music.
Starting from this introduction it is possible to understand that the innovation of products for the music industry is composed of two parts:

- Technological innovation in terms of support;
- Artistic innovation, in terms of diversification

The first reaction to this new "liquid" form of music comes from a company working in the electronic industry, Apple, that in 2001 released its Ipod, an innovative type of walkman able to contain the new format and to update the system of music fruition.
At the same time Apple, in order to fight illegal downloads, created a new system to legally download mp3s through the website iTunes, where each track costs 99 cents.
This adjustment of the industry had a positive effect, changing the tendencies that Internet users had.
But among consumers the invention of iPod and iTunes was not a means to make the most of the music product but rather a support that enabled its diffusion and portability, besides being a status symbol. The only alternative for the industry, to contrast a system that practically eliminates the cost of music purchase, is creating a product that can widen the target as much as possible. In this way, music consumers, who used to be music lovers, experts or adolescents looking for a social identity turned into *hi-tech lovers*[6], fond of technology as fashionable symbol of contemporary times.
According to the 2009 Ifpi report, only 5% of the total of music downloads is legal. According to these data, recorded music, whose demand is sensibly connected to the increase in price, spread almost totally through the illegal market.
Now it is reasonable to ask ourselves if the cause of this lack of appropriability is an insufficient protection of the phonographic product by the juridical institution through the strengthening of patents that guarantee the exclusivity to discography in using its own technology.

[6] Francesco Balducci, *Music or hi-tech lovers? Inferring into the determinants of music consumption*, Rivista degli economisti/a.XIV, n.2, agosto 2009

From the economic point of view, a market that is not "limited" in some way by considerable institutional restrictions, like the music market, is free to expand and develop in the most appropriate way. According to some this idea of economics is the best form possible, but as we mentioned the lack of a real protection on innovation brought about by businesses can completely destabilize the market leading it to collapse.

In the current situation many cultural and artistic goods are protected by the institutions, while pop music has always been considered with diffidence by those who work in the cultural field and considered as a good to exploit for commercial matters to the last drop, often undervaluing the educational or harmful potential that some musical messages bring about.

Why is the music market destined to oligopoly?

In a system where there is competition, firms have a certain power in determining prices. So firms tend to obtain the highest quantity of extra-profits and if there are no consistent barriers at the entrance other firms will enter the market.

In this way considering the total number of firms, demand will be shared among a higher number of businesses and each firm will sell less and less.

In the long term each firm will have to lower the price of the product and when the price equals the average cost a balance will be reached, not allowing extra-profits. It is risky to keep this form of market, especially since in the long term decisions concerning new production factors must be taken.

In these conditions only the firms with considerable capital to invest can survive.

It is also possible to give an economical explanation to the fall of product innovation that we are trying to discuss here; in an oligopolistic situation competition among firms is lowered at its minimum thanks to firms' collusion mechanisms.

In the following pages we will try to understand the causes of this "innovation crisis" within the economic context, checking the degree of connection between market situations and innovation, trying in this way to interpret current situation with new instruments.

3. Schumpeter and innovation dynamics

The information that we collected until now will be later analyzed from the point of view of innovation, aware of the role played by innovation within economic processes, especially starting from the end of WW2.

Joseph Schumpeter was the first to examine the role of innovation in modern industrial systems. According to him innovation consists of introducing new elements in the combinations of production means in order to conquer new supply resources. In this sense innovation is connected with creativity, because innovation is originated by entrepreneurs who decide to act in a way that is different compared to the existing practices.

As a consequence to innovation there is an adaptive reaction because the other firms try to keep up with the leading firm, according to traditional economic laws. Innovation (both incremental and radical[7]) can be a fruitful phenomenon for the firm if it is able to generate profits after acquiring new skills and knowledge that other firms cannot learn immediately. These extra-profits disappear once the other firms have acquired the necessary means to adaptation, so the firm has to maintain a constant innovation to safeguard its market power. Although Schumpeter, in his innovation theory, excludes technologic invention and development from the economic context responsible of innovation, the next researches demonstrated in accord that both technologic-scientific development -from studies and researches -and inventions -often accidental and not motivated by economic reasons-contribute to introduce innovations in the economic context.

There are two main schools of thought concerning the perspectives of innovation economy: neoclassical and evolutionary. In the neoclassical perspective the economic system is assessed according to the aspects of statics, to dimensions and to innovation as an accumulation of info. Within this framework subjects act according to a kind of rationality defined substantial, possessing perfect information about market fluctuations. Keeping in mind the previous introduction we can state that economic theories that are useful to motivate some theses are more connected to the evolutionary perspective, that puts the emphasis on unforeseeable aspects of innovation and considers innovative learning as a multidimensional process that not only has to do with information acquisition but also encloses elements that cannot be foreseen since according to this theory the firm has a limited rationality, that is to say it is not able to foresee every consequence that innovation brings about in the reference market. Considering the lack of knowledge the firm in advance sets some goals that can guarantee the development of strategies and behaviours (satisfying behaviour) only if they are met. The same type of observation was elaborated by Schumpeter, according to whom the entrepreneur cannot "grasp effectively all the effects and repercussions of the programmed enterprise". The uncertain condition surely characterized music market at least until the advent of digital in 1979 thanks to the compact disc. Such a change, due to investment in technologic research, can be interpreted as the will by two pioneer firms of the technologic market to exploit profit opportunities investing in research, while safe because they were acting in a market that until that moment had always been fruitful and prone to innovation. We can summarize in a few points the historic evolution of the support:

[7] *Incremental innovation* is a gradual type of innovation, while the *radical* one come from sudden changes in the production strategies.

1. Introduction of the phonograph for home use by Berliner in 1885, and the introduction of coin-operated phonograph by Columbia in 1895 and music production for bourgeoisie at the beginning of the Twentieth century;
2. Vinyl record (1948) and jukebox popularity in the mid-fifties characterized the free time of the new teenagers' social class;
3. The Walkman appeared in 1979, and determined the new form of listening to music through the audio-cassette. This portable device was not destined to collective listening anymore but more oriented for individual use and purchase. This phenomenon boosted the consumerist attitude towards music and the subsequent production of "disposable" artists.
4. During the 80s the use of compact disc spread. It enables a better quality listening and paves the way for the digital era.
From the product-support point of view these are the innovations that revolutionized discography during the twentieth century, not considering the fundamental moments in which discoveries and inventions appeared in periods when discography had not reached yet a capitalistic dimension, as it happened for the invention of phonoautograph by Edouard-Leon Scott de Martinville in 1857. Now it is possible to match each of these periods with a change of stylistic character, keeping in mind the current market situation:

- Diffusion of jazz music (1), musical genre of racial origin, purified and offered to a wealthy and sophisticated audience. Music in this period is in all its glory as far as experimentation and valorisation are concerned, since it is considered a luxury good on which it is possible to invest;
- Rock'n'roll emerged (2), changing radically musical style and aspect and took it back to its popular dimension favouring anyways white artists and consumers;
- Diffusion in the market of mainstream pop as a genre (3 and 4), known today as 80s pop, where imagination comes before music and therefore is consumed and forgot at a faster speed.

Now we can analyse the market situation in correspondence with the three points listed above:
- Stable market characterized by the introduction of a limited number of firms that delineate a collusion and exploit Berliner Gramophone Company's innovation through imitating strategies;
- Market by then consolidated in the form of collusion but characterised by a high decentralization that is composed of joint ventures or simple sale of artists between major labels and independent labels;
- Oligopoly characterised by a progressive concentration controlled by the low appropriability of compact disc innovation and the low quality of music cassette recording, whose use is almost entirely dedicated to do-it-yourself and illegal duplication

Considering this perspective as we described above, we remark that progress in this kind of innovation always happens in correspondence of specific changes on an economic level that interest market functioning, as noted here above.

According to Schumpeter's theory, innovation affects the market situation as a whole and does not interest technologic and scientific research. So real changes at a organizational level of a firm or of the market are driven by turning moments that come unexpected to destroy a consolidated situation and create a new one.

This is the principle of creative destruction. Such a phenomenon can be done if the innovation leader firm has enough resources in order to introduce new consumer goods (product innovation), new production methods (process innovation) or new forms of industrial organization (organizational innovation).

The natural conclusion we can draw is that from this point of view the real engine of innovation is represented by the firm that holds a sufficiently high market power, a condition that in a market can be satisfied in a situation where there are a few firms aimed at profit which possess a high percentage of the market, as in an oligopoly.

Now, assessing these conditions we can remark how the most representative moments of this product innovation correspond to market forms where

As far as the first period is concerned, music commercialization starts with the possibility of oligopolistic firms to use catalogues and present them to the public, exploiting the invention of the phonograph through the commercialization of the good-disc, innovating the organization.

During the second half of the twentieth century, a product innovation was possible thanks to a cooperation among minor and major companies, since minor firms were able to supply new raw materials to the majors.

Now we enter digital era that characterizes contemporary age. The compact disc, as we saw, represents the result of two leader companies' innovation (Sony and Philips), important both in music market and in electronics market.

Electronic industry is naturally innovative and it invests massive amounts of money in research. From the point of view of innovation, the compact disc represented for music history a very important moment, since it allowed a high definition listening. Such an innovation brought about some changes in the market's structure that turned out to be disastrous.

Probably what was difficult to expect is the evolution of the phenomenon, that lead to compression of files that could be transferred on a computer for free. Moreover the market situation at the time seems to have favoured this last change: in a moment in which the very high concentration of the market makes firms get higher profits, in this case through a price rise, file sharing represents an effective alternative to buying music, confirming once again that demand is very elastic.

From this point of view this is without any doubt an example of particularly destructive creation.

Here follows a description of current market conditions related to the characteristics of the industry's technological regimes.

4. Firm behaviour in connection with "Technological Regime"

A very interesting contribution that is worth considering is by Franco Malerba and Luigi Orsenigo, two innovation economy's experts who illustrate in the paper "Technological Regimes and Firm Behaviour" (Economic Journal, 1993) some remarks on firms' behaviour in some settings and the related change in market structure along the years.

Their thought focuses on a firm's technological regime[8] as the ensemble of factors that act on different levels:

- Opportunity conditions: how easy, comfortable or convenient can be for a firm to adopt a certain type of technology or innovating activity. The opportunity, besides having major or minor levels, is characterized by pervasiveness, that is to say the possibility for a certain technology to find a use in different sectors from the one of origin;
- Conditions of appropriability: as we have already explained it is the level of protection by imitations that affect a particular type of technology. A high level of appropriability determines a high level of externality, positive or negative consequences on third party due to production or consumption activities;
- Accumulativeness conditions: the opportunity that the current state of innovation is a basis for the development of future innovation. Three types of accumulativeness exist: technological/individual, that is related to specific technology and cognitive processes that involve a certain type of innovation, organizational and company-related, that concerns resources needed by a firm to achieve innovation. A proportional level of appropriability corresponds to conditions of high accumulativeness.

- Knowledge base: with this term we identify a complex property of the firm that concerns the set of skills, knowledge, information and experience that allow innovative activity. There are moreover two different dimensions of knowledge: secrecy dimension (tacitness), that determines firm specific

[8] The concept of technological regime was introduced by Nelson and particularly by Winter (1982, 1984) and is composed by three main factors: technological opportunities, innovation appropriability, innovation cumulativity and basic knowledge property.

technologies, localized and codified, and complexity dimension, that is the degree of relation among different elements cooperating in the application of such skills.

On a general level, if these conditions are fully met, the firm is likely to follow a particularly innovative regime, on the contrary if the opportunities are scarce, there is lack of protection on innovations and few opportunities originated by previous innovations, the firm will have to deal with a stagnant condition according to the following pattern:

Tab. 2. Malerba and Orsenigo's matrix

	High Opportunity		Low Opportunity	
	High Accumulativeness	Low Accumulativeness	High Accumulativeness	Low Accumulativeness
High Appropriability	Radical and Incremental Innovation	Radical Innovation	Incremental Innovation	No systematic Innovation
Low Appropriability	Radical and Incremental Innovation/Imitation	Radical Innovation/Imitation	Incremental Innovation/Imitation	No Innovation

Now we must apply this information to the case we are examining.

At first new music production companies exploited the fact that the new product created sensation and invested in research that led to the development of the first support for cylinder phonograph. Despite the barriers at the entrance, it is possible to remark that the opportunities for industries to manage innovations in an exclusive way thanks to the complexity of the requested knowledge (and the opportunity to exploit the previous innovation) determine in this case a very high degree of innovation of incremental nature that will force competition to develop new supports.

As historical analysis shows, music industry, although it has been an oligopoly, since 30s-40s has been characterised by a growing concentration, which determines a further increasing of the barriers to entry and a decreasing degree of opportunity, even if the accumulation level is stable. Anyways, the relative stability that was reached in the dynamics of physical support production allows to develop imitative strategies by other minor firms, which during the 50s, considered the lack of pervasiveness (technology applied to discs production was highly specialized) led new independent firms to specialize, producing niche music or relatively new music genres. As Dowd stated this imitative strategy used by indie labels shows its innovative potential only when it can be used by major labels.

During the 60s each firm's skills consolidated, and the resulting situation generated opportunities thanks to which also minor firms were able to achieve enough independence to increase innovation at least as far as the content of the product is concerned, enriching the global music panorama and investing on the scouting

of new talents, while big companies have a decentralized structure that allows them at the same time to diversify the offer. Such phenomenon happened until the late 70s, when a technological innovation developed by an electronic firm (sector characterised by a very high pervasiveness) that is able to elaborate a marketable product for the music industry, that as we saw is going to revolutionize its usability. From that moment onwards the internalization of innovations by discography has increased and it is rightful to make the assumption that in the next years electronic industry's pervasiveness had a strong influence on record industry too. But while the former has skills developed thanks to a kind of innovative activity naturally devoted to Research, the latter has less skills which cannot make it independent in the technological field.

This gradual internalization was the reason why discography got a marginal role in relation to electronic industry, which thanks to the low degree of pervasiveness can diversify its products to the maximum extent and disguise its features according to the application of its own technology. The degree of versatility that audio format reached, in particular because of the shift from analogical to digital, not only made the support subject to more and more frequent cooperation with diverse industries (such as with the technology company Apple) but it also lowered the appropriation ability of discography as regards technological innovation and it led to almost inexistent accumulation conditions.

If industry does not completely master technological progress it is at risk of losing control of production. The phenomenon that spread during the last decade seems to be a consequence of this low accumulation: after the creation of CDs, innovation did not move forward and no research has been carried out concerning a possible evolution of the format.

Such experiments were carried out by professionals of the electronic sector who besides being interested in the commercial exploitation of the content were also able to shape registration adding new transmissibility.

It is innovative, but the peculiarity of the case lies in the position of the new file sharing market has in relation to the industry. Acting as a competitor but exploiting a totally different setting, illegal download gets rid of production costs and gains profits through agreements with the sponsors, made possible also thanks to the elevated access and visibility of reference websites. It is a kind of firm with high productivity[9].

According to a research by Nelson and Winter (1982) industry with a restricted number of firms is characterized by a fair level of productivity. In conditions where imitation is easy, firms tend to keep an equal level of productivity. In this context innovative firms will stand out in relation to how hard to reproduce is the innovation, increasing in this way productivity rate.

As a consequence when there is low accumulation (the situation that we are experiencing right now) and rampant imitation, firms are not stimulated to innovate. According to this contribution, peer to peer's great success is fully justified also in economic terms.

[9] *Productivity* can be defined as the relation between output and numer of input used for the production.

Summing up it was possible to see how during its history discography has always been characterised by almost incremental innovation. Since it is a type of product whose success is determined by the public, the setting in which it operates is characterized by a very high degree of uncertainty.

The contribution by Stefano Breschi, Franco Malerba and Luigi Orsenigo entitled: "Technological regimes and Schumpeterian patterns of innovation" is without any doubt to make reference to.

This study is the evolution of the previously quoted one since here researchers look for a correspondence between the two traditional innovation models elaborated by Schumpeter and the concept of technological regime with the various combinations of the four factors that constitute it. First of all the researchers define the technological regime that characterizes the two models: creative destruction and creative accumulation, its opposite pattern. Having defined the components of the technological regimes the researchers define the first Schumpeterian pattern as characterized by: high technological opportunities, low appropriability, low accumulation and basic knowledge that allow the entrance of innovators and a consequent instability. On the contrary, in the case of creative accumulation we face a technological regime characterized by: low opportunity conditions, high appropriability and high accumulativeness (on a business level) and a basic knowledge that does not allow the participation of new innovative firms.

The correspondence between technological regimes and Schumpeterian patterns is assessed on an empirical level through the analysis of innovation factors in 16 types of industries, making the association of the two theories plausible.

According to a recent school of thought, the two models, named Mark I and Mark II, can be collocated within the theory of an industry's life cycle. According the ideas of Abernathy, Utterback, Gort and Klepper, creative destruction and accumulation are simply phases in the life of an industry. When there is competition, at an early stage of an industry's life, new firms are the main innovators. On the contrary, at an advanced stage, big companies are the only ones that can use their innovative ability. Taking into account the history of recording industry it is possible to note how main innovations come from market conditions in which a few firms hold the power (oligopoly), because of this we could state that in our case the pattern Mark I (creative destruction) sets a higher degree of innovation.

As we tried to explain until this point, although music industry does not have particularly high innovation skills, what we can understand considering the premises is that the two different innovation regimes described above alternated during the course of history, creating different market structures and a different degree of innovation.

In particular, in correspondence with the breaking points as described by creative destruction, the degree of innovation peaks.

That is why the controversial contemporary phenomenon called file sharing is so representative of this theory. Music industry is now at the end of its life cycle and it underwent destructive innovation because of

firms with a certain market power that do not work in the music field but rather on the web. Maybe the reasons for this failure can be found only in the lack of protection of appropriability but the real issue to deal with now is if we are dealing with a real failure/bankruptcy.

Let us consider the purely artistic point of view: since the creation of Napster all musicians took a side in favour or against free diffusion of music. The sceptics thought that their intellectual property rights were being harmed, while those who were more trusting considered the net a new resource of space for promoting music.

Actually, as described by the creative destruction's theory, file sharing burst on the scene in a world composed by record labels and successful artists where keeping the status quo was very important.

Unfortunately that era was coming to an end, causing disappointment among those alleged rock'n'roll talents clung to the romantic vision of music that stopped to exist at least thirty years ago. This does not mean that there is no space for new stylistic panoramas (outside the mainstream market). The new situation creates a different role for the artist that is close to the concept of art for the Art.

Probably, if on the one hand the industry keeps on supporting old production and marketing methods that do not have the success they whished for, on the other hand who keeps on working in music for its own sake finds new space to be known enriching the international scene, thanks to new niches.

5. Can technological innovation be originated by the demand?

Here we present some figures related to the sales of music supports between 1973 and 2010. The following data are from the RIAA (Recording Industry Association of America) database, the Association for the protection of registered music that aims at protecting the firms. RIAA provides a database that shows in a graph the units and the value in dollars of music supports produced in America and sold in the world since 1973. Thanks to this resource I tried to analyse the amount of products sold in the years when new supports came out. A graph can show to what extent the sale of a previous support can be an inspiration for the creation and the introduction in the market of an innovative product.

As it is possible to remark in the following chart, the success of cassettes, characterised by a constant increase, leads the firms to experiment with a further support innovation, introducing CDs in the market in 1979. CDs became successful after a few years but later the compact disc proved to be one of the most profitable formats in history, reaching the highest turnover in 1999 (about 13 million dollars, riaa.com). In the same year Napster stabbed everybody in the back. It fooled all the investments made by professionals of the sector turning music from product to exploit into a free service (provided you paid for your internet connection) and in this way Napster took away much of the demand from the traditional music industry.

Napster's success induced Apple to create a similar product, trying to internalize the lost demand. Apple was partly successful: after the CD crisis, singles' download (the most significant data concerning the sale of digital supports) exceeded CDs in sale units, but with a significantly lower turnout.

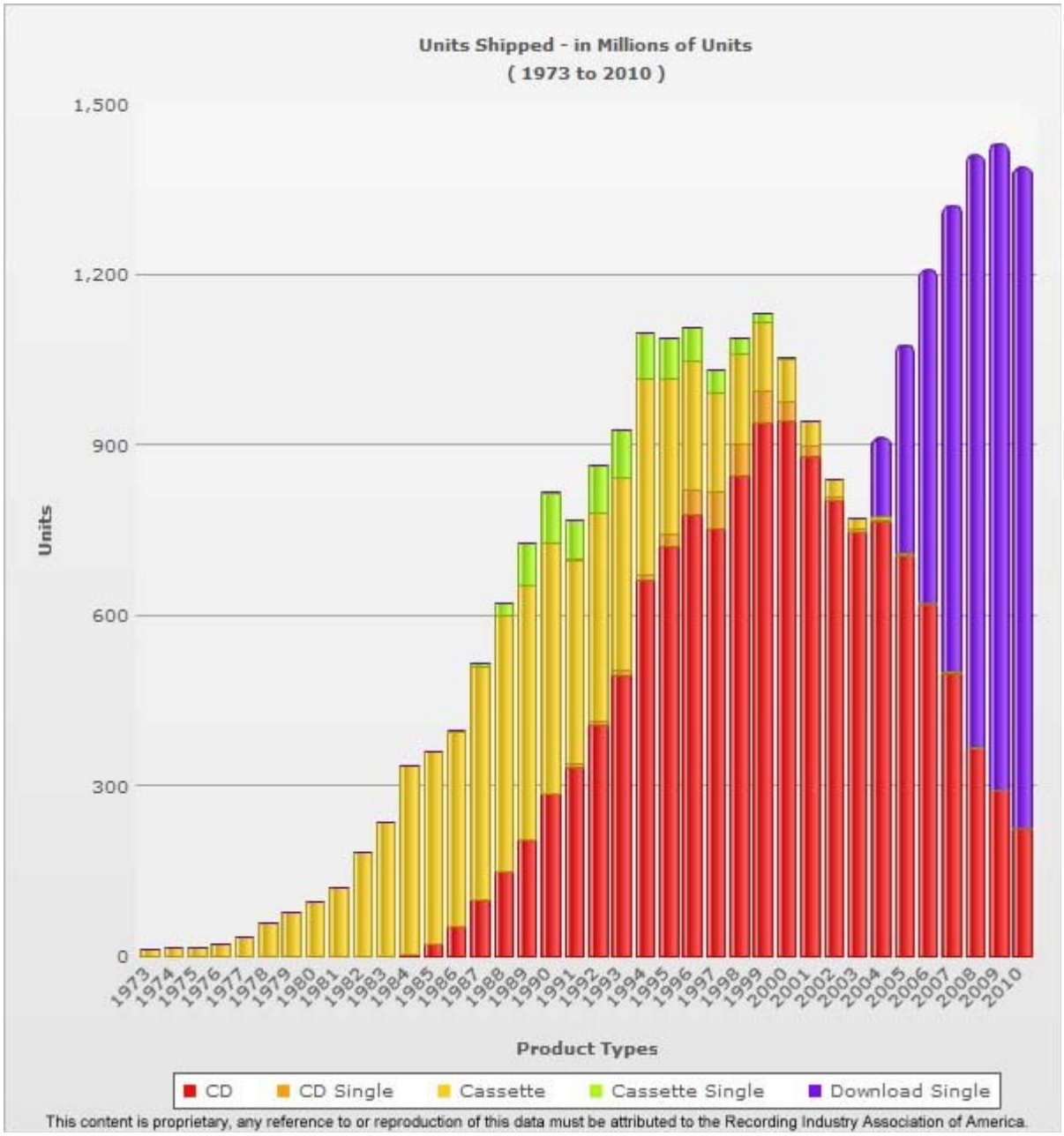
Now, if we consider production costs -that for compact discs are definitely higher- we can draw the conclusion that it would be more convenient to focus on digital market, when actually since the majority of music is not downloaded legally any expectation on production is useless.

This explains why the market is currently experiencing such disorientation.

Besides this fact we can still remark how in any period we consider the success of an innovation is an inventive to create a further innovative product.

Therefore the hypothesis that technological innovation can be controlled by demand is confirmed.

Chart 1. Fusion Chart of different product types corresponding to the year of production described in millions of units



1973-1979: increase in the demand for music cassettes and creation of compact disc;

1985-1999: compact disc becomes successful on a large scale and reaches its peak of units sold, but because of a low appropriability it lead to the creation of the illegal market;

1999-2001: Napster becomes the main means to acquire music on the web, forcing Apple to imitate its innovation

The cycle of the product seems influenced by the success it gets in terms of sales, therefore the demand determines its life or death.

Now it is possible to keep on examining and to state that the demand for a previous product affects the supply for the following product. If the stimulus to production comes from demand, then supply tries to exploit to the fullest the information acquired by the demand to further increase sales according to the natural logic of the profit. Such phenomenon was described by Eric von Hippel through the concept of *lead users*, that is to say consumers who show interest for a type of innovative product and therefore through buying it stimulate its production and further innovation. This theory is supported by other scholars such as Jeffrey L. Funk; according to him in the case of music industry the success of a product affects further inputs to experimenting. In this sense we could interpret the introduction of I-pods as an attempt to repeat the success that Walkman had and meeting the consumers' needs, since they want the music product to be more and more functional.

6. Conclusions

Above we tried to examine the music market during the years keeping in mind several perspectives to get a complete overview of the current situation.

Generally speaking, one of the causes of the failure of reproducible music product can be found in the international economic crisis of the last years, in the lack of employment and erosion of wages. On the other hand, music consumption is anyway demanding also for those who are wealthy, since it is a time consuming activity that requires free time. A further remark could be made as far as the relationship between demand and supply is concerned, because of the power the latter has in the music market. It is worth quoting the so-called demand-pull theory by Schmookler, who analysed the relation between market demand and the trends of technological change. From his point of view, within markets particularly subject to market forces also innovative activity tends to react to the presence of an expected profitability deriving from the expansion of demand, which constitutes the main incentive to innovation.

According to this idea, other researchers (Gerosky and Walters, 1995) observed how much the factor of demand is able to influence innovative activity. Since markets have a limited ability to absorb new products in a certain period, when they register an increase in the demand this ability favours the introduction of new technological regimes that are now more profitable. On the other hand, as we could see, the limited appropriability that is a common feature of many industries, determines an erosion of these profits, therefore the firm is going to have a limited amount of time to exploit the extra profits deriving from innovation. This situation confirms the theory according to which for the firm it would be more profitable to introduce innovations when the firm registers a trend of raising demand, as we observed in the previous graph. But it

is illogic to support a theory of pure demand-pull, because demand is itself highly influenced by supply. Today, even if legal download has become quite successful, technology cannot be managed like it used to be in the past and pop music does not seem to deserve the attention it had considering the cultural-artistic content.

The current situation presents a general flattening of contents and a decrease in the demand for music and a consequent increase in the appropriation of contents through illegal actions.

This is possible because the music product can be easily substituted and because of the very low appropriability that recording labels found during the last decade.

Firms' reaction is to invest as much as possible in a few profitable occasions that do not fully compensate progressive losses.

If product diversification can be considered a possible solution, maybe it is worth to reconsider the investment in new contents. This action is possible through scouting and critique. Talent scouts' profession has been losing importance for a few years but it should not be considered as a part of the marketing activity, but rather as an artistic activity that can be compared to that of a gallery manager who has the responsibility to organize the new works, displaying the most valuable ones. Critique works in the exact same way, but this activity lost its independence in relation to the productive sector, probably because of the crisis. These ideas could be enough to support the hypothesis of stronger public actions to guarantee:

- A wider choice for the present and future generations;
- Citizens' fulfilment through artistic expression;
- Economic possibility to consume music through the contrast of the rise of prices

Lastly, a higher consideration of popular music on an institutional level would be useful to award these goods the status of merit goods, able to generate positive externalities of consumption linked to the concept of social well-being. According to this kind of reasoning music goods should be protected as artistic goods worth of attention by the public sector, both because of the communicative potential of songs, and of the risk that a lack of protection would lead to cultural flattening.

A superficial relation with the musical message can sometimes result risky.

It is proved that messages with a high media exposure such as those transmitted by pop music are able to influence public opinion, also indirectly.

To ensure that new generations are not bound to sing hymns to vacuity, it would be worth to consider the hypothesis to protect music from abuses connected to the media or to economic factors, with the help of specific norms, aimed at protecting consumers and producers.

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